ON THE GENETIC MANIPULATION OF ANIMALS: a response to evelyn pluhar

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It is encouraging to see a philosopher addressing the ethics of genetic engineering of animals, especially the creation of transgenic species, which entails the insertion of the genes of one species into another. This, as Evelyn Pluhar documents, has already been accomplished in mice, which grew twice as big twice as fast after having human growth genes inserted during early embryogenesis.

While I agree with Pluhar's sentiment that genetically engineered animals may well be treated inhumanely, as are most animals in factory farms, I disagree with her belief that genetic engineering, specifically transgenic manipulation, "is not in itself cruel, nor need it lead to cruelty." If we accept by definition that animal cruelty is unnatural, human-induced suffering, then we must accept the high probability that transgenic animals, created for specific utilitarian purposes (such as rapid growth, large muscle mass, high milk production, etc.) are likely to suffer. Giant "super mice" suffer if not given extra zinc in their diets. Traditional selective breeding for high productivity and "performance" has resulted in a variety of domestogenic or production-related diseases in farm animals and correlated suffering.[1] Likewise, selective inbreeding has created a host of genetic disorders in pure-bred dogs, many of which cause sickness and suffering. Transgenic manipulations directed toward these same ends are likely, therefore, to lead to cruelty. As with plants, such manipulations with animals will probably lead to increased susceptibility to pests and diseases, a problem already aggravated by selecting for high yield using traditional breeding methods.

Pluhar's contention that "genetic farming" is simply an extension of traditional breeding practices--a view advanced by many scientists in defense of transgenic manipulations--is way off the mark in one other respect. Never before has it been possible to cross the genetic boundaries that keep individual species separated. This means that the telos or inherent nature of animals can be so drastically modified (as by inserting elephant growth genes into cattle) as to radically change the entire direction of evolution and primarily toward human ends at that. Is not the unique genetic make-up of species--their telos--to be respected and worthy of moral consideration?

Some scientists contend that animals have no such telos. Professor M. J. Osborn, Head, Department of Microbiology, School of Medicine, The University of Connecticut, has written that

> the idea that a species has a "telos" is contrary to any evidence provided by biology and belongs rather in the realm of mysticism. That mysticism is a poor basis for sound public policy is amply confirmed by history.[2]

Dr. Maxine Singer, of the National Institutes of Health, opines that

> History, from Galileo through Lysenko, teaches us that mysticism can never yield rational and wise public policy in scientific matters. . . . The notion that a species has a telos (a purpose) contravenes everything we know about biology. Species can have, and many in the past have had, a telos (an end), namely, extinction. That is the only telos known to exist.[3]

It is self-evident that, as in the worldview of such scientists, the future world that they will create, if they are not restrained, will be one where animals, nature, and the entire creative process are controlled and manipulated to satisfy primarily, if not exclusively, human ends. These scientists reveal their ignorance and insensitivity in dismissing philosophy and ethics as "mysticism" and in failing to grasp the full and

DISCUSSION

original meaning of "telos," which, according to Aristotle, who made the term famous, includes final form, function, purpose, end, and inherent nature.

Yet other scientists have discovered the philosophy of Teilhard de Chardin,[4] who foresaw the natural world evolving into a humanized "technosphere." They find this vision supports their belief that man cannot only improve upon nature through biotechnology but that it is a natural process of evolution (if not divinely ordained) for humans to take control of the creative process. While Evelyn Pluhar rightly points out the pitfalls of hubris and other problems that the allure of our power over the gene might create (such as developing sub and supra-human beings), she fails to address the need for a new paradigm or worldview, without which the application of biotechnology, in medicine and agriculture especially, will most likely have adverse consequences.

Consider the recent award of almost $2,000,000 in public funds by the U.S. Army Medical Research Institute of Infectious Diseases at Fort Detrick, Maryland, to Molecular Genetics, Inc., a genetic engineering company in Minnetonka, Minnesota. They are to develop a recombinant DNA vaccine for Rift Valley fever virus, a disease of cattle and humans prevalent in the Middle East and Africa. While it would, perhaps, not be altruistic to oppose such research to prevent this disease in humans and their livestock, the impact on the environment and wildlife of expanding the human and livestock populations are of concern. This is a Catch 22 situation, since the increase in human population survival following the successful development of a Rift Valley fever vaccine would create the need for an expanded livestock population to sustain the people. A vicious circle will develop without rigorous birth-control programs and the adoption of alternative agricultural and food habits. As with other livestock disease control and eradication programs in the "third world," the emphasis on increased livestock production is primarily not for local consumption but for export to more affluent countries, especially for the European fast-food hamburger market. Profits generally benefit the few in power in these third world counties, where malnutrition and environmental degradation (especially desertification) are increasing and will not be rectified by raising more cattle as a "cash crop" for export.

Thus, genetic engineering, if applied without a change in worldview in the practice of medicine and agriculture alike, will accelerate the rate of entropy and the demise of all life on earth.

The wholesale dissemination of genetically engineered bacteria (so-called "new pesticides") could have devastating ecological consequences. Even a seemingly benign spraying of strawberry fields with Pseudomonas syringiae, engineered to prevent frost forming, could get into the upper atmosphere and inhibit ice crystal formation, which could mean no rain.[5]

It is not pessimistic to fear that biotechnology will be misapplied. Rather, it is realistic, since, as with other technological innovations and "fixes," serious social, environmental, mental, and economic problems are likely to arise unless this new technology is applied within a wholly different paradigm, not one of the technocratic but of the planetary and holistic sort. Realizing the inherent wisdom of self-control in relation to the ecological whole (or unified field of being) and recognition of the intrinsic value of other beings are necessary prerequisites to a new worldview that will help to insure that genetic engineering will be applied appropriately. This worldview is not anti-science and anti-technology; rather, it recognizes that without ecological forethought, humility, and compassion, the costs and risks of misapplying our new found powers over the gene will be far greater than any of the short- and long-term benefits that the genetic engineers and their investors dream of today.

Notes

1. Michael W. Fox, Farm Animals: Husbandry, Behavior and Veterinary Practice (Baltimore: University Park Press, 1983).

2. Excerpt from letter sent to the N.I.H. Recombinant DNA Advisory Committee in support of transgenic research.

3. Excerpt from letter sent to the N.I.H. Recombinant DNA Advisory Committee in support of transgenic research.

4. Teilhard de Chardin, Man's Place in Nature (New York: Harper & Row, 1966).

5. E. P. Odrin, "Biotechnology and the Biosphere," Science 220 (1985), p. 1338.